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August 18, 2010

Mr. Steven Way
On-Scene Coordinator
U.S. Environmental Protection Agency, Region 8
Mail Code: 8EPR-ER
1595 Wynkoop Street
Denver, Colorado 80202-1129

**SUBJECT: START 3, EPA Region 8, Contract No. EP-W-05-050, TDD No. 1005-01
Letter Report for Rico-Argentine St. Louis Tunnel Site, Rico, Delores County,
Colorado.**

Dear Mr. Way:

Attached is the final letter report for the Rico-Argentine St. Louis Tunnel site located in Rico, Colorado. Onsite START activities for this project were conducted June 2 and 3, 2010. Your comments were incorporated into this final report and submitted for your approval.

If you have any questions, please call me at 303-291-8212.

Very truly yours,

URS OPERATING SERVICES, INC.

Bryan Williams
Project Manager

cc: Charles W. Baker/UOS (w/o attachment)
File/UOS

EPA ACTION BLOCK

- ☒ Approved
- ☐ Approved, TDD to follow
- ☐ Approved as corrected
- ☐ Disapproved
- ☐ Review with _____
- ☐ Original to _____
- ☐ Copy to _____
- ☐ Reply envelope enclosed

10/3/10 _____
Date By

LETTER REPORT
Rico-Argentine St. Louis Tunnel
Rico, Delores County, Colorado

1.0 INTRODUCTION

URS Operating Services, Inc. (UOS) was tasked by the Environmental Protection Agency (EPA) under the Superfund Technical Assessment and Response Team 3 (START) contract # EP-W-05-050 Technical Direction Document (TDD) No. 1005-01 to provide technical support to Region 8 On-Scene Coordinator (OSC) Steve Way with a Removal Assessment of a former mine site in Delores County, Colorado. The assessment was regarding an adit discharge into the Delores River immediately upstream of the town of Rico, and more specifically, the concentration and flow rates regarding that discharge.

Onsite START activities related to this assessment were conducted on June 2 and 3, and included the collection of four environmental samples, the determination of adit flow rates at several points onsite, as well as documenting site conditions and providing technical support. Field activities followed the applicable UOS Technical Standard Operating Procedures and the Emergency Response Program generic Quality Assurance Project Plan (UOS 2005, UOS 1999), as well as the site-specific Sampling Plan and Health and Safety Plan.

2.0 BACKGROUND

A watershed study was performed for the town of Rico in 2006 by compiling and evaluating previous sampling data from the Delores River as well as several of the feeder creeks in the study area. This included the St. Louis tunnel adit, as well as the series of settling ponds that the adit discharge flows through, and associated discharge point to the Delores River. The study noted that the ponds did not capture and control all of the discharge from the adit. It also noted that there was limited data upon which to base further conclusions and recommended evaluating the geothermal influences of the springs in the immediate area of the ponds.

3.0 SITE ACTIVITIES

On June 2, 2010, START member Bryan Williams mobilized to Rico, Colorado to provide assistance to EPA OSC Steven Way. START arrived early and conducted a reconnaissance of the site prior to meeting with EPA. During the reconnaissance, START walked the settling ponds looking for places that may have breached into the adjacent river. None were observed although at least two locations on the upper

settling ponds had less than 12 inches of freeboard. START also located the two onsite flumes and noted that they were without any markings to calculate flow rates. START left the site to prepare for sampling.

On June 3, 2010 START met with EPA OSC Steve Way to discuss sampling locations, deciding on two surface water samples by the two installed flumes, and two sediment samples from the upper two settling ponds (Photos 1, 4, and 5). Sediment samples were collected only from the upper two ponds to confirm historical analytical data of metals concentration and not to provide a comprehensive characterization of the sludge. Samples were collected from 0900 hours through 1010 hours, and are listed in Table 1 and shown in Figure 1.

Following sample collection, START measured the flow rates at the two installed Parshall flumes. Readings were calculated for both the Parshall flumes. An estimated flow rate of 1.34 cubic feet per second (cfs) was calculated for the upper flume, located below the collapsed portal, and an estimated flow rate of 1.12 cfs was calculated for the lower flume, located in the outfall 2 channel. START attempted to install a Cutthroat portable flume in a collapsed and exposed area of the tunnel between the adit entrance and the remaining portion of the tunnel to measure flow that appeared to be lost to infiltration before the fixed Parshall flume (Photos 3, 6, and 7). However, no readings were made from the Cutthroat flume due to an inability to completely seal the channel around the flume itself.

After collecting information to calculate the flow rates, GPS data were collected and samples were prepared and delivered to Test America for analysis on June 4, 2010. Surface water samples were analyzed using EPA Methods 6010B and 7470A for total and dissolved metals and EPA Compliant Method SM 2340B for dissolved hardness as calcium carbonate, dissolved magnesium hardness as calcium carbonate, and dissolved calcium hardness as calcium carbonate. Sediment samples were analyzed using EPA Methods 6010B and 7471A for total metals.

Table 2 provides the analytical results for the samples collected during the site activities. Historical data compiled for the East Fork of the Delores River Watershed Plan and collected during July 2002 by Short Elliott Hendrickson Inc. (SEH) show that dissolved zinc at the outfall (410 micrograms/liter) was almost 10 times lower than analysis from the START sampling event shows in June 2010. Flow rates were not available for the 2002 sampling event.

4.0 REFERENCES

URS Operating Services, Inc. (UOS). 1999. "Emergency Response Program – Generic Quality Assurance Project Plan."

URS Operating Services, Inc. (UOS). 2005. "Technical Standard Operating Procedures for the Superfund Technical Assessment and Response Team (START), EPA Region 8." September 2005.

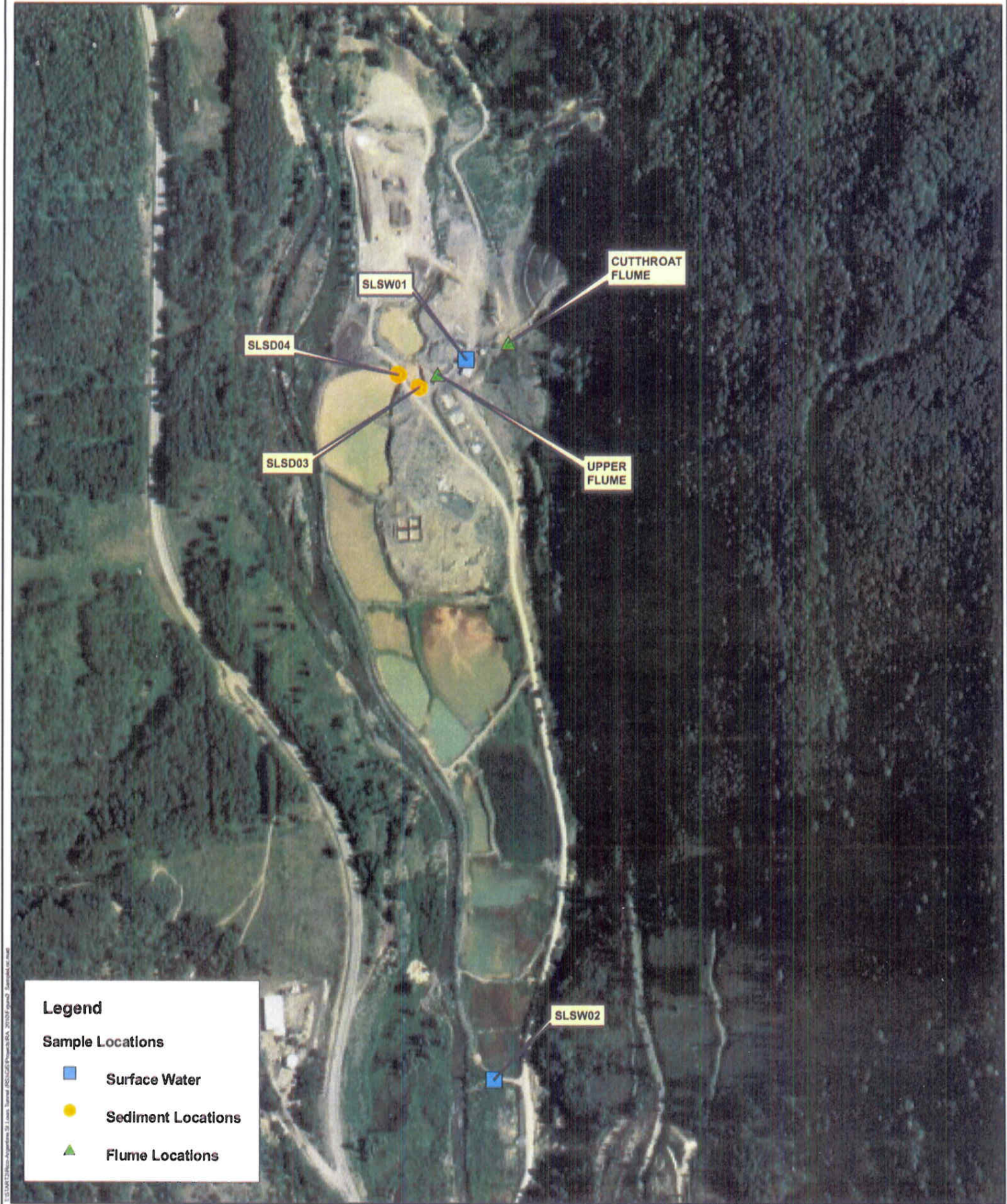
Table 1
Sample Locations and Rationale

Sample ID	Location	Rationale
SLSW01	Downstream of adit portal	Determine concentrations as they exit adit.
SLSW02	Downstream of final settling pond outfall (CDPHE Outfall 02)	Determine concentrations as they enter Delores River.
SLSD03	Upper settling pond, 5-point composite	Determine near surface sludge heavy metals concentrations in uppermost ponds.
SLSD04	Second settling pond, grab sample	Determine near surface sludge heavy metals concentrations in uppermost ponds

Table 2
Sample Results, Rico-Argentine St. Louis Tunnel

Sample ID: Analyte (Abbrev)		Surface Water (µg/l)				Sediment (mg/kg)	
		SLSW01 Upgradient of adit flume		SLSW02 Downgradient of outfall flume		SLSD03 5 aliquots from upper pond	SLSD04 1 aliquot from next pond down
		Total	Dissolved	Total	Dissolved		
Aluminum	(Al)	1,300	350	26 J	18 U	26,000	39,000
Antimony	(An)	3.1 U	3.1 U	3.1 U	3.1 U	2.4 U	6 U
Arsenic	(As)	4.7 J	4.4 U	4.4 U	4.4 U	41	57
Barium	(Ba)	23	22	23	25	66	90
Beryllium	(Be)	1.2	0.81 J	0.47 U	0.47 U	18	25
Cadmium	(Cd)	54	52	31	31	92	130
Calcium	(Ca)	220,000	230,000	250,000	250,000	23,000	27,000
Ca Hardness as CaCO ₃		-	580	-	630	-	-
Chromium	(Cr)	1.2 J	0.66 U	0.73 J	0.66 U	18	27
Cobalt	(Co)	5.9 J	4.2 J	2.8 J	3.6 J	18	24
Copper	(Cu)	420	91	10 J	3.5 J	4,900	7,800
Hardness CaCO ₃		-	670	-	740	-	-
Iron	(Fe)	9,400	2,500	380	27 J	220,000	310,000
Lead	(Pb)	13	2.6 U	2.6 U	2.6 U	550	760
Magnesium	(Mg)	21,000	22,000	26,000	25,000	2,500	2,600
Mg Hardness as CaCO ₃		-	90	-	100	-	-
Manganese	(Mn)	3,900	3,100	2,400	2,400	9,500	12,000
Mercury	(Hg)	0.027 U	0.027 U	0.027 U	0.027 U	0.035 U	0.085 U
Nickel	(Ni)	7.7 J	7.3 J	5.9 J	6.4 J	16 J	24 J
Potassium	(K)	1,900 J	1,800 J	2,800 J	2,900 J	500 J	830 J
Selenium	(Se)	4.9 U	4.9 U	4.9 U	4.9 U	5.5 U	14 U
Silver	(Ag)	1.8 J	1.8 J	1.8 J	1.6 J	3.6 J	2.7 J
Sodium	(Na)	11,000	12,000	15,000	15,000	430 J	930 U
Thallium	(Tl)	4.9 U	4.9 U	4.9 U	4.9 U	4.2 U	10 U
Vanadium	(V)	1.1 U	1.1 U	1.1 U	1.1 U	11 J	14 J
Zinc	(Zn)	8,300	7,700	4,100	3,900	18,000	27,000

J The associated numerical value is an estimated quantity because quality control criteria were not met. Presence of the element is reliable.
 U The analyte was not detected at or above the detection limit.
 - Not analyzed
 µg/l Micrograms per liter
 mg/l Milligrams per liter




Legend

Sample Locations

- Surface Water
- Sediment Locations
- Flume Locations

Source: Bing Maps

0 250 500 1,000 Feet



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Rico-Argentine St. Louis Tunnel
Rico, Dolores County, Colorado
Sample Location Map
Figure 1

August 2010

TDD No. 1005-0001

APPENDIX A

Photolog



Photo #1
SLSW01 facing south, between the adit and the upper flume.

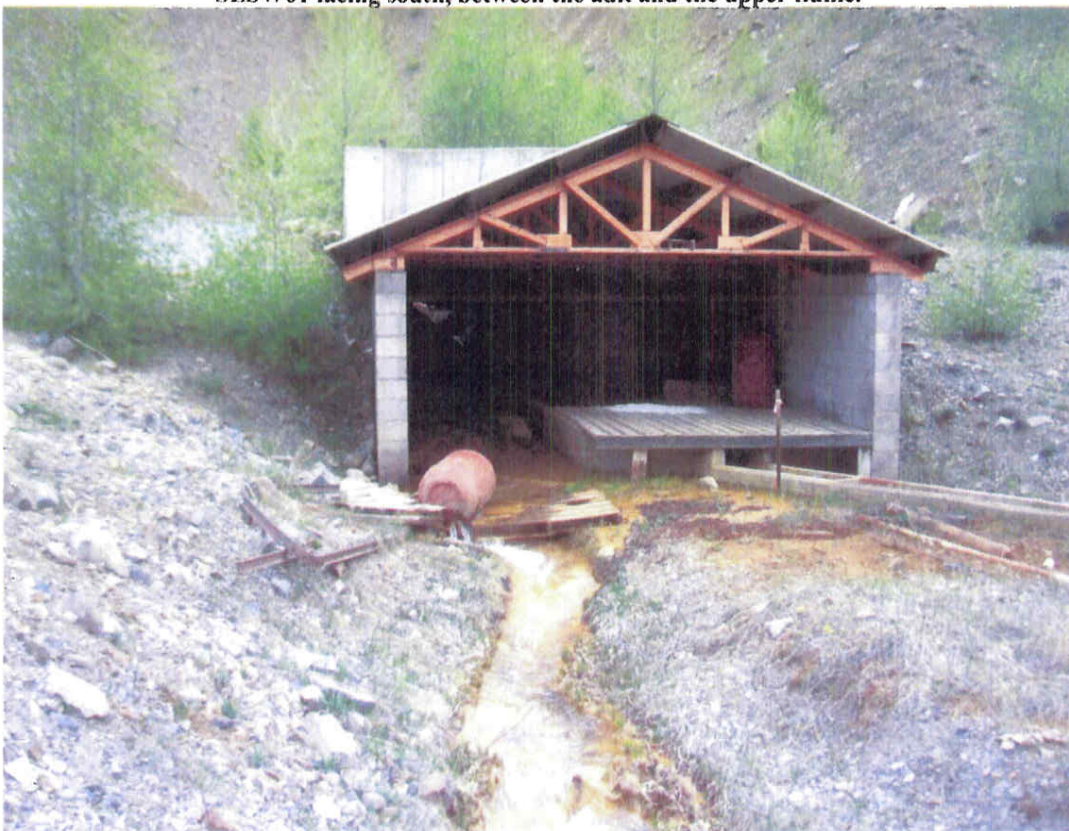


Photo #2
St. Louis Tunnel adit.



Photo #3
Upper flume, 20 feet downstream of SLSW01.



Photo #4
Upper settling pond, SLSD03, 5-point composite.



Photo #5
SLSD04, grab sample at infall to second settling pond.



Photo #6
Cutthroat weir placement, above the adit at first point accessible to tunnel discharge, facing southeast.



Photo #7

Weir placement, facing west. Adit is visible in background, outfall on other side of the mound.